

# JASPER TAN

PhD Candidate  
Department of Electrical and Computer Engineering  
Rice University

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## RESEARCH INTERESTS

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Computational imaging, computer vision, deep learning, privacy-preserving machine learning

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## EDUCATION

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### **PhD in Electrical and Computer Engineering**

Rice University, December 2022 (expected)

Advisors: Dr. Richard Baraniuk and Dr. Ashok Veeraraghavan

### **MS in Electrical and Computer Engineering**

Rice University, August 2018

Advisors: Dr. Richard Baraniuk and Dr. Ashok Veeraraghavan

Thesis: “Face detection and verification with FlatCam lensless imaging system”

### **BS in Electrical Engineering and Computer Science & Engineering, *summa cum laude***

Santa Clara University, June 2015

GPA: 3.99/4.00

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## INDUSTRY POSITIONS

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### **PhD Machine Learning Software Engineering Intern**

Facebook Music Video Ranking, Meta, Seattle, Washington, 2022

- Developed a machine learning-based music video recommendation system for the Facebook app

### **Computational Imaging Intern**

Imaging Systems Group, Light Labs Inc., Redwood City, California, 2019

- Drove a research project on image super-resolution
- Developed an intuitive graphical user interface for compactly serializing multi-camera system parameters

**Technical Intern**

Corporate Application Engineers, Synopsys Inc., Sunnyvale, California, 2013

- Tested and identified errors in place-and-route software tool

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**SELECTED HONORS AND RESEARCH AWARDS**

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**Rice University:**

Data to Knowledge Lab Graduate Fellow, 2020

Ken Kennedy Engineering Enhancement Fellowship, 2015–2019

Texas Instruments Graduate Fellowship, 2015–2016

**Santa Clara University:**

Student Life Award, 2015

School of Engineering Award for Research Excellence, 2015

Academic Achievement Award in Electrical Engineering, 2015

Outstanding Computer Engineering Senior Award, 2015

School of Engineering Senior Design Presentation Award, 2015

Upsilon Pi Epsilon, 2015

Alpha Sigma Nu, 2015

Carl H. Hayn Physics Prize, 2013

Tau Beta Pi, 2013

**Others:**

Merit Scholar, Ateneo de Manila University, 2011

Xavier Award, Xavier High School, 2007

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**TEACHING EXPERIENCE**

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**Graduate teaching assistant**

ELEC 599: First Year Grad Students Projects

Rice University

Spring 2020

**Graduate fellow**

DSCI 435: Applied Machine Learning and Data Science Projects

Rice University

Spring 2020

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## PROFESSIONAL ACTIVITIES

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### Academic Service

Co-organizer, CVPR UG2+ Challenge Workshop, 2020

Reviewed for:

*IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*

*International Conference on Computer Vision (ICCV)*

*Indian Conference on Computer Vision, Graphics, and Image Processing (ICVGIP)*

*Advances in Modeling and Learning Interactions (NeurIPS Workshop)*

*Neural Information Processing Systems (NeurIPS)*

### University Service

President, Rice Electrical & Computer Engr. Graduate Student Association, 2020–2021

Graduate Student Chair, Rice Engr. Research Experience for Undergraduates (REU), 2021

Social Chair, Rice Electrical and Computer Engr. Graduate Student Association, 2019–2020

Secretary, Rice Electrical and Computer Engr. Graduate Student Association, 2016–2017

Sophomore representative, Santa Clara University IEEE, 2012–2013

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## JOURNAL PUBLICATIONS

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**J. Tan**, V. Boominathan, R. G. Baraniuk, and A. Veeraraghavan, “EDoF-ToF: extended depth of field time-of-flight imaging,” in *Optics Express*, vol. 29, no. 23, pp.38540-38556, Nov 2021.

**J. Tan**, L. Niu, J. Adams, V. Boominathan, J. T. Robinson, R. G. Baraniuk, and A. Veeraraghavan, "Face detection and verification using lensless cameras," in *IEEE Transactions on Computational Imaging*, vol. 5, no. 2, pp. 180-194, June 2019.

P. Wilhite, A. A. Vyas, J. Tan, **J. Tan**, T. Yamada, P. Wang, J. Park, and C. Y. Yang, “Metal-nanocarbon contacts”, in *Semicond. Sci. Technol.*, vol. 29, no. 5, p. 054006, 2014.

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## CONFERENCE PAPERS

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**J. Tan**, B. Mason, H. Javadi, R.G. Baraniuk, “Parameters or Privacy: A Provable Tradeoff Between Overparameterization and Membership Inference,” in *Neural Information Processing Systems (NeurIPS)*, Nov. 2022

V. Saragadam, **J. Tan**, G. Balakrishnan, R.G. Baraniuk, A. Veeraraghavan, “MINER: Multiscale Implicit Neural Representations,” in *European Conf. Comput. Vision*, Oct. 2022

S. Alemohammad, H. Babaei, R. Balestrieri, M. Y. Chung, A. I. Humayun, D. LeJeune, N. Liu, L. Luzi, **J. Tan**, Z. Wang, R. Baraniuk, “Wearing a MASK: Compressed Representations of Variable-Length Sequences Using Recurrent Neural Tangent Kernels,” in *IEEE Conf. Acoust. Speech, Signal Process.*, Jun. 2021.

- J. Tan**, S. Khan, V. Boominathan, J. Byrne, R. Baraniuk, K. Mitra, and A. Veeraraghavan, “CAnOPIC: pre-digital privacy-enhancing encodings for computer vision,” in *IEEE Int. Conf. Multimedia & Expo*, Jul. 2020
- S. Khan, A. V. R. V. Boominathan, **J. Tan**, A. Veeraraghavan, and K. Mitra, “Towards photorealistic reconstruction of highly multiplexed lensless images,” in *IEEE Int. Conf. Comput. Vision*, Oct. 2019
- J. Tan** and C. S. Burrus, “Near-linear-phase IIR filters using Gauss-Newton optimization,” in *IEEE Int. Midwest Symp. Circuits Syst.*, Aug. 2019
- J. Tan**, V. Boominathan, A. Veeraraghavan, and R. G. Baraniuk, “Flat focus: depth of field analysis for the FlatCam lensless imaging system,” in *IEEE Conf. Acoust. Speech, Signal Process.*, Mar. 2017, pp. 6473–6477
- J. Tan** and S. G. M. Koo, “A survey of technologies in internet of things,” in *IEEE Int. Conf. Distrib. Comput. Sensor Syst.*, May 2014, pp.269–274

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## PREPRINTS

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- J. Tan**, D. LeJeune, B. Mason, H. Javadi, R.G. Baraniuk, “Benign Overparameterization in Membership Inference with Early Stopping,” arXiv:2205.14055, May 2022

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## PRESENTATIONS

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- “CAnOPIC: pre-digital privacy-enhancing encodings for computer vision,” *IEEE International Conference on Multimedia & Expo*, Virtual, July 2020.
- “FlatCam: Thin Lensless Cameras Through Signal Processing,” *IEEE International Conference on Acoustics, Speech, and Signal Processing*, New Orleans, Louisiana, March 2017.
- “A Survey of Technologies in Internet of Things,” *IEEE International Conference on Distributed Computing in Sensor Systems*, Marina Del Ray, California, May 2014.

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## SKILLS AND QUALIFICATIONS

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- Programming languages (from most experience to least): Python, Matlab, SQL, C++, C
- Deep learning frameworks: Pytorch, MatConvNet
- Experience and knowledge in computer vision, machine learning, deep learning, computational imaging, solving inverse problems
- Proficiency in analytical thinking, communication, and collaboration